

What is claimed is:

1. An organic semiconductor device comprising:
  - a pair of opposing electrodes;
  - a carrier mobility organic semiconductor layer formed between the pair of opposing electrodes; and
  - a buffer layer inserted between at least one of the pair of electrodes and the organic semiconductor layer in contact therewith and has a work function or an ionization potential between a value of a work function of the electrode in contact and a value of an ionization potential of the organic semiconductor layer.
2. An organic semiconductor device as set forth in claim 1, wherein the organic semiconductor layer is made of a P-type semiconductor.
3. An organic semiconductor device as set forth in claim 1, wherein the buffer layer is made of a metal, a metal oxide or an organic compound.
4. An organic semiconductor device as set forth in claim 1, wherein the buffer layer has a film thickness of 5000 angstroms or less.
5. An organic semiconductor device as set forth in claim 4, wherein the buffer layer has a film thickness of 1000 angstroms

or less.

6. An organic semiconductor device as set forth in claim 1, wherein the buffer layer is formed discretely in island.

7. An organic semiconductor device as set forth in claim 1, wherein the pair of electrodes is a source electrode and a drain electrode, the organic semiconductor layer is laminated so as to form a channel between the source electrode and the drain electrode, and a gate electrode is disposed so as to apply an electric field on the organic semiconductor layer disposed between the source electrode and the drain electrode.

8. An organic semiconductor device as set forth in claim 7, wherein a gate insulating film that electrically isolates the gate electrode from the source electrode and the drain electrode is provided.

9. An organic semiconductor device as set forth in claim 7, wherein both of the source electrode and the drain electrode are disposed on a surface on one side of the organic semiconductor layer.

10. An organic semiconductor device as set forth in claim 7, wherein each of the source electrode and the drain electrode is disposed on one of both sides of the organic semiconductor layer with the organic semiconductor layer interposed therebetween.

11. An organic semiconductor device as set forth in claim 1, wherein the pair of electrodes is a source electrode and a drain electrode, the organic semiconductor layer is laminated in a film thickness direction so that the organic semiconductor layer is interposed between the source electrode and the drain electrode, and a gate electrode buried in the organic semiconductor layer is provided.

12. An organic semiconductor device as set forth in claim 11, wherein the gate electrode buried in the organic semiconductor layer is formed in lattice, in comb or in slit.